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AP Stats 5A/5B

Bivariate Data Project

Regression Analysis: shoe size versus height(in)

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	1	197.84	197.841	112.65	0.000
height(in)	1	197.84	197.841	112.65	0.000
Error	48	84.30	1.756		
Lack-of-Fit	18	45.31	2.517	1.94	0.053
Pure Error	30	38.99	1.300		
Total	49	282.14			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
1.32526	70.12%	69.50%	66.35%

Coefficients

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	-10.38	1.78	-5.84	0.000	
height(in)	0.2795	0.0263	10.61	0.000	1.00

Regression Equation

shoe size = -10.38 + 0.2795 height(in)

Fits and Diagnostics for Unusual Observations

Obs	shoe size	Fit	Resid	Std Resid	
2	11.000	8.351	2.649	2.02	R

12	5.500	3.878	1.622	1.31		X
18	14.000	10.867	3.133	2.43	R	
35	4.500	1.922	2.578	2.22	R	X
43	13.000	13.103	-0.103	-0.08		X

R Large residual

X Unusual X

Method of Findings: For this experiment I conducted my own research instead of finding data from a previous experiment. To find my data I measured the height of people and recorded the size of their shoe. I used the same tape measure for each participant and used a random sample from people at work and at school there was no sample bias.

Purpose: The purpose of this experiment is to show the relationship between height and shoe size.

Sample Used: To eliminate sample bias I chose random people from more than one location with different ages, genders, and races for a more variety in results.

Original Data:

height(in)	shoe size
64	9.5
67	11
66	6
63	6
76	12
75	12
68	8.5
69	8
62	7.5
53	6

72	10
51	5.5
66	6
66	7.5
64	6.5
67	9
77	11
76	14
76	12
62	5
69	8.5
66	8.5
68	7
62	5
65	6.5
57	5
63	7
65	8
72	9.5
68	9.5
73	10
73	12
72	10
65	6

44	4.5
66	6.5
64	8
63	6.5
63	8.5
78	12.5
75	10
77	11
84	13
64	7
64	7.5
72	8
62	6
64	6
65	8.5
74	10.5